

**GOLF BALL CORE COMPOSITIONS CONTAINING HIGH VICAT SOFTENING TEMPERATURE, RESILIENT THERMOPLASTIC MATERIALS**

**ABSTRACT**

The invention is directed to golf ball core compositions comprising at least one natural or synthetic rubber and at least one high Vicat softening temperature thermoplastic material, methods of preparing the compositions, and golf ball cores and golf balls including the compositions. The compositions of the invention are made by mixing at least one natural or synthetic rubber and at least one thermoplastic or thermoplastic elastomer at a first temperature; cooling the mixture to a second temperature which is below an activation temperature of a free-radical initiator; adding the free-radical initiator to the first mixture to form a second mixture; and heating the second mixture to a third temperature that to facilitate crosslinking. The golf ball cores are incorporated into multilayer balls including dual cover balls with thin outer layers.